

Seminar

Characteristics of glassy dynamics and how active self-propelled forces affect them

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Fast cooling of a liquid bypassing crystallisation leads to glass: the structure remains liquid-like, but dynamics differ dramatically. Moreover, many biological systems also show glassy dynamics. I will discuss the dynamical properties of glassy systems. Specifically, how the crossovers observed in different dynamical quantities are related and what are the key properties of glasses. I will then discuss a one-dimensional kinetically constrained spin model and show that a change in the relevant excitation can lead to a crossover in the autocorrelation function from stretched exponential to power law. Next, I will show the effects of active self-propelled forces, with magnitude f_0 and persistence time T_p , on the glassy dynamics. I will focus on the nontrivial aspects of activity: how it can lead to re-entrant dynamics and tuneable fragility. Finally, I will discuss the role of changing the fraction of active particles on the system properties.

Thursday, Jul 3rd 2025

11:30 Hrs (Tea / Coffee 11:15 Hrs)

Auditorium, TIFRH